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10/586,244

05/16/2007

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EXAMINER

SUCH, MATTHEW W

ART UNIT

PAPER NUMBER

2891

NOTIFICATION DATE

DELIVERY MODE

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ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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<b>Office Action Summary</b>	Application No. 10/586,244	Applicant(s) ZAUMSEIL ET AL.	
	Examiner MATTHEW W. SUCH	Art Unit 2891	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 17 July 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-36 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 July 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>See Continuation Sheet</u> .                                  | 6) <input type="checkbox"/> Other: _____                          |

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :17 July 2006, 16 May 2007 and 2 January 2009.

## **DETAILED ACTION**

### ***Priority***

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Information Disclosure Statement***

2. The information disclosure statements (IDS) submitted on 17 July 2006, 16 May 2007 and 2 January 2009 are being considered by the examiner.

### ***Claim Objections***

3. Claim 1 is objected to because of the following informalities: the phrase "the semiconductive layer" in Line 3 should read "the organic semiconductive layer"; the phrase "the gate dielectric layer" in Line 4 should read "the organic gate dielectric layer". Appropriate correction is required.
4. Claim 5 is objected to because of the following informalities: the phrase "the gate dielectric layer" in Line 2 should read "the organic gate dielectric layer". Appropriate correction is required.

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5. Claim 9 is objected to because of the following informalities: the phrase "the insulating material" in Line 2 should read "the organic insulating material". Appropriate correction is required.

6. Claim 22 is objected to because of the following informalities: the phrase "the zone" in Line 3 should read "a zone". Appropriate correction is required.

7. Claim 23 is objected to because of the following informalities: the phrase "the zone" bridging Lines 2-3 should read "a zone". Appropriate correction is required.

8. Claim 24 is objected to because of the following informalities: the phrase "the zone" bridging Lines 2-3 should read "a zone". Appropriate correction is required.

9. Claim 26 is objected to because of the following informalities: the phrase "the bias voltage" in Line 2 and Line 3 should read "a bias voltage". Appropriate correction is required.

10. Claim 27 is objected to because of the following informalities: the phrase "the bias voltage" in Line 2 and bridging Lines 2-3 should read "a bias voltage". Appropriate correction is required.

***Claim Rejections - 35 USC § 101 / 35 USC § 112***

11. 35 U.S.C. 101 reads as follows:

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Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

12. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

13. Claims 28, 34 and 36 each provide for the use/process of a light-emitting transistor, but, since the claim does not set forth any steps involved in the use/process, it is unclear what use/process applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use/process is actually practiced.

Claims 28, 34 and 36 are rejected under 35 U.S.C. 101 because the claimed recitation of a use/process, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd. v. Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

14. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

15. Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 1 recites "a reactive electron affinity  $EA_{rxn}$  greater than or equal to  $(EA_{semicond.})$

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2eV)" in Lines 5-6. This renders the claim indefinite because it is unclear because it is unclear whether the limitation(s) in the parenthesis are part of the claimed invention. See MPEP § 2173.05(d). Specifically, it is unclear whether the Applicant is claiming that the electron affinity of the organic semiconductor layer is -2 eV or can be other values. The

16. Claims 5-7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The language of "wherein the [organic] insulating material does not containing a repeat unit or a residue unit comprising..." is ambiguous to the point of indefiniteness.

Specifically, this language can be read at as the insulating material does not comprise:

one of a repeat unit or a residue unit (under the interpretation that repeat unit and residue unit are merely synonyms of each other);

one of a repeat unit or a residue unit (under the interpretation that both a repeat unit and a residue unit are both free of the trapping group).

one of (i) a repeat unit or (ii) a residue unit (under this interpretation, it is unclear how the insulating material can be totally devoid of any repeat unit and without being a single molecule with only a single monomer unit thereof – such a monomer is not a layer and is incapable of acting as an insulator). Additionally, the language of "residue unit" is unclear because is the residue part of (or not part of) the actual insulating layer or it the "residue unit" a left over residue from some sort of precursor used in forming the insulating layer? If so how does a "residue unit" (or lack thereof) define the material of the insulating layer? Clarification is required.

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The recitation of "aromatic -OH" is unclear because a -OH group is not an aromatic group. The recitation of "aromatic -SH" is unclear because a -SH group is not an aromatic group. The recitation of "aromatic -COOH" is unclear because a -COOH group is not an aromatic group.

17. Claims 6-8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 6-8 each recite the limitation "the insulating layer". There is insufficient antecedent basis for this limitation in the claim. It is unclear whether the Applicant is attempting to claim a previously recited element or if the Applicant is attempting to claim an element that is separate and distinct from previously recited elements.

18. Claims 22-24 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 22-24 each recite the limitation "the zone of the organic semiconductive layer from which the light is emitted". There is insufficient antecedent basis for this limitation in the claim. It is unclear whether the Applicant is attempting to claim a previously recited element or if the Applicant is attempting to claim an element that is separate and distinct from previously recited elements.

19. Claim 25 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as



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the invention. Claim 25 recites "a reactive electron affinity  $EA_{\text{rxn}}$  greater than or equal to ( $EA_{\text{semicond.}} - 2\text{eV}$ )" in Lines 5-6. This renders the claim indefinite because it is unclear because it is unclear whether the limitation(s) in the parenthesis are part of the claimed invention. See MPEP § 2173.05(d). Specifically, it is unclear whether the Applicant is claiming that the electron affinity of the organic semiconductor layer is -2 eV or can be other values.

20. Claims 26 and 27 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 26 and 27 each recite the limitation "the bias voltage applied to a control electrode", "the bias voltage applied to the hole injecting electrode and that applied to the electron injection electrode", "the recombination zone", and "the channel of the transistor". There is insufficient antecedent basis for these limitations in the claims. It is unclear whether the Applicant is attempting to claim a previously recited element or if the Applicant is attempting to claim an element that is separate and distinct from previously recited elements. Additionally, it is unclear what "that" (see Line 4 of Claim 26) is.

21. Claims 29-33 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claims recite the limitation "the step of defining" in Line 1 of each claim. There is insufficient antecedent basis for this limitation in the claim. It is unclear whether the Applicant is attempting to claim a previously recited element or if the Applicant is attempting to claim an element that is separate and distinct from previously recited elements.

***Claim Rejections - 35 USC § 102***

22. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

23. In so far as definite, claim 22 is rejected under 35 U.S.C. 102(b) as being anticipated by Hayashi (280). Hayashi teaches an ambipolar (see Figures and Para. 0113 teaching that the charge carriers include both holes and electrons) light-emitting transistor including an organic semiconductive layer (Element 1; Para. 0113-0134 all describe this organic semiconductive layer) in contact with an electron injection electrode (cathode, see Element 3) and a hole injection electrode (anode, see Element 5) . Regarding the recitation of "in contact with an electron injection electrode and a hole injection electrode", the examiner notes that this language fails to actually recite that the claimed device actually comprises an electron injection electrode and a hole injection electrode. As such, this language merely states how the organic semiconductor is used. Specifically that the organic semiconductor is used "in contact with" these electrodes. The Examiner notes that a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. See, e.g., *In re Pearson*, 181

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USPQ 641 (CCPA); *In re Minks*, 169 USPQ 120 (Bd Appeals); *In re Casey*, 152 USPQ 235 (CCPA 1967); *In re Otto*, 136 USPQ 458, 459 (CCPA 1963). See MPEP §2114.

***Claim Rejections - 35 USC § 103***

24. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

25. In so far as definite, claims 23 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hayashi ('280). Hayashi teaches an ambipolar (see Figures and Para. 0113 teaching that the charge carriers include both holes and electrons) light-emitting transistor including an organic semiconductive layer (Element 1; Para. 0113-0134 all describe this organic semiconductive layer) in contact with an electron injection electrode (cathode, see Element 3) and a hole injection electrode (anode, see Element 5). Regarding the recitation of "in contact with an electron injection electrode and a hole injection electrode", the examiner notes that this language fails to actually recite that the claimed device actually comprises an electron injection electrode and a hole injection electrode. As such, this language merely states how the organic semiconductor is used. Specifically that the organic semiconductor is used "in contact with" these electrodes. The Examiner notes that a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure

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is capable of performing the intended use, then it meets the claim. See, e.g., *In re Pearson*, 181 USPQ 641 (CCPA); *In re Minks*, 169 USPQ 120 (Bd Appeals); *In re Casey*, 152 USPQ 235 (CCPA 1967); *In re Otto*, 136 USPQ 458, 459 (CCPA 1963). See MPEP §2114.

Regarding the recitation of "from which the light is emitted is located more than [1 or 5] micron[s] away from both the electron as well as the hole injecting electrode", the claims fail to actually recite that this zone is part of the claimed device. However, even if it was, although Hayashi does not explicitly teach this detail, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have the light emission zone to be more than 5 microns away from the source and drain electrodes in order to produce a device that is large enough for the light to be visible to the unaided eye, such as for a pixel application. Additionally, such detail merely requires a change in size. Furthermore, the examiner takes the position that the choice of thickness ranges of the insulation film is not critical to the invention; therefore, the range is a matter of choice. \*\*\* discloses the claimed invention except for teaching that a thickness of the insulation film is greater than a film thickness of the gate insulator. It would have been an obvious matter of design choice to make the thickness of the insulation film greater than the film thickness of the gate insulator, since such a modification would have involved a mere change in the size of a component and it has been held that a mere change in size is recognized as being within the level of ordinary skill in the art. *In re Rose*, 220 F.2d 459, 105 USPQ 237 (CCPA 1955). *In re Rinehart*, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976). See MPEP § 2144.04 IV A.

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26. In so far as definite, claims 1-21 and 25-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hayashi ('280) in view of Kelley ('472).

a. Regarding claims 1, 25 and 35, Hayashi teaches a circuit of a light-emitting field-effect transistor including an organic semiconductive layer (Element 1; Para. 0113-0134 all describe this organic semiconductive layer) and an organic gate dielectric layer (Element 2; Para. 0139-0140 teaches the organic gate dielectric layer) forming an interface with the organic semiconductive layer (see Figures, for example). The examiner notes that the manner in which this claim is written does not state any additional elements that actually comprise the device. The reasons for this follows.

Regarding the recitation of "having an electron affinity EAsemicond", the examiner notes that this statement merely identifies that organic semiconductors have an electron affinity and does not limit the claim.

Regarding the language of "that is capable of emitting light when operated in a biasing regime in which negative electrons are injected from an electron-injecting electrode into the organic semiconductive layer, and positive holes are injected from a hole-injecting electrode into the organic semiconductive layer", the Examiner notes that a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. See, e.g., *In re Pearson*, 181 USPQ 641 (CCPA); *In re Minks*, 169 USPQ 120 (Bd Appeals); *In re Casey*, 152 USPQ 235

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(CCPA 1967); *In re Otto*, 136 USPQ 458, 459 (CCPA 1963). See MPEP §2114. The recitation of "that is capable of emitting light when operated in a biasing regime in which negative electrons are injected from an electron-injecting electrode into the organic semiconductive layer, and positive holes are injected from a hole-injecting electrode into the organic semiconductive layer" does not distinguish the present invention over the prior art of Hayashi who teaches the structure as claimed. The reason is because Hayashi teaches that the organic semiconductive layer is light emitting (see Para. 0061, at least).

Regarding the recitation of "characterized in that", the examiner notes that such language does not limit what the organic gate dielectric layer actually comprises, but merely states how it is characterized. Continuing, while Hayashi teaches that the organic gate dielectric layer is an organic material that is interfaced with the organic semiconductor material, formable by a spin coating process (see Para. 0140) there is no explicit teaching of the material, since such detail is conventional.

However, Kelley teaches using polysiloxanes, such as poly(dimethylsiloxane) and poly(dimethylsiloxane-co-diphenylsiloxane) (see Para. 0038) as an organic gate insulating material that interfaces with an organic semiconductor. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the poly(dimethylsiloxane) and poly(dimethylsiloxane-co-diphenylsiloxane) as taught by Kelley as the organic gate insulating material of Hayashi. One would have been motivated to do so since Kelley teaches that these materials provide the benefit of improving organic transistor performance, such as reducing the threshold voltage and increasing carrier mobility (see Table 2, for example). Additionally, these materials are

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able to formed by spin coating (see Kelley Para. 0044), which is also a desired trait from Hayashi. Regarding the recitation of "characterised in that the bulk concentration of trapping groups in the gate dielectric layer is less than  $10^{18}\text{cm}^{-3}$ , where a trapping group is a group having (i) an electron affinity  $EA_x$  greater than or equal to  $EA_{\text{semicond}}$  and/or (ii) a reactive electron affinity  $EA_{\text{rxn}}$  greater than or equal to  $(EA_{\text{semicond}} - 2\text{eV})$ ", the examiner notes that the poly(dimethylsiloxane) and poly(dimethylsiloxane-co-diphenylsiloxane) of Hayashi in view of Kelley meet this language because these electron affinity requirements are merely material properties and meeting recitation (i) and/or (ii) is merely a consequence of material selection. As noted by Applicant's specification at Page 28, the poly(dimethylsiloxane) and poly(dimethylsiloxane-co-diphenylsiloxane) materials have the material properties which satisfy the claim.

b. Regarding claim 2, the transistor is an ambipolar transistor (see Figures and Para. 0113 teaching that the charge carriers include both holes and electrons).

c. Regarding claims 3-4, electron affinity is a material property and Hayashi teaches that the organic semiconductor is Alq3, which has an electron affinity of 2.7 eV.

d. Regarding claims 5-11, the poly(dimethylsiloxane) and poly(dimethylsiloxane-co-diphenylsiloxane) insulating polymer materials of Hayashi in view of Kelley meet each of these claims for the reasons shown above in claim 1. The

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- e. Regarding claim 12, the materials of Hayashi in view of Kelley can be crosslinked (see Kelley Para. 0048).
- f. Regarding claim 13, Hayashi teaches that the organic semiconductor material can comprise a semiconductive polymer, such as polythiophene (see Para. 0131).
- g. Regarding claim 14, Hayashi teaches that the organic semiconductor material can comprise a semiconductive oligomer, such as anthracene (see Para. 0117).
- h. Regarding claim 15, Hayashi teaches that the organic semiconductive material can comprise an organic small molecule, such as Alq3 (see Para. 0119).
- i. Regarding claims 16-21, the manner in which these claims are written do not further limit the scope of the claimed structure of the device because claim 1 fails to recite that the claimed structure comprises the electron injecting electrode and hole injecting electrode. As such, these claims merely recite more detail concerning the intended use of the device. See discussion in claim 1 above. Again, the Examiner notes that a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. See, e.g., *In re Pearson*, 181 USPQ 641 (CCPA); *In re Minks*, 169 USPQ 120 (Bd Appeals); *In re Casey*, 152 USPQ 235



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(CCPA 1967); *In re Otto*, 136 USPQ 458, 459 (CCPA 1963). See MPEP §2114.

Nevertheless, Hayashi envisages an electron injecting electrode cathode and hole injecting electrode anode which can be the same material or different (see Para. 0104) in contact with the organic semiconductor layer (see Figures).

j. Regarding claims 26 and 27, Hayashi teaches applying a bias voltage to a control gate electrode (see Para. 0061). A bias voltage is also applied to a hole injecting electrode (anode Element 5; see Para. 0061) and an electrode injecting electrode (cathode Element 3; see Para. 0061). Regarding the recitation of "

k. Regarding claims 28 and 36, Hayashi in view of Kelley teaches a method for making the claimed device since the device exists and the claim fails to set forth any steps or acts that do or accomplish anything.

l. Regarding claims 29-33, the examiner notes that all of these method steps recite acts for forming elements that are not actually part of the claimed device. As such, these claims fail to limit the method since they do not recite steps of forming elements that fall into the scope of the claimed structure.

m. Regarding claim 34, Hayashi in view of Kelley teaches "use" of the device since the device exists and the claim fails to set forth any steps or acts.

### ***Double Patenting***

27. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

28. In so far as definite, claims 1-36 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims of copending Application No. 10/586,149. Although the conflicting claims are not identical, they are not patentably distinct from each other because while the claims of Application No. 10/586,149 recite an n-channel or ambipolar transistor instead and do not recite a light emitting transistor, the elements which actually comprise the limitations of the claims are identical (as shown below). As such, it would have been obvious to one of ordinary skill in the art at the time the invention was made to make the n-channel or ambipolar transistor claimed in Application No. 10/586,149 a light emitting transistor in order to increase functionality and provide light output.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

n. Regarding claim 1, claim 22 of Application No. 10/586,149 teaches all of the structural limitations of the claim that comprises the device, with the obvious modifications as set forth above.

o. Regarding claim 2, claim 23 of Application No. 10/586,149 teaches all of the structural limitations of the claim that comprises the device, with the obvious modifications as set forth above.

p. Regarding claim 3, claim 24 of Application No. 10/586,149 teaches all of the structural limitations of the claim that comprises the device, with the obvious modifications as set forth above.

q. Regarding claim 4, claim 25 of Application No. 10/586,149 teaches all of the structural limitations of the claim that comprises the device, with the obvious modifications as set forth above.

r. Regarding claim 5, claim 26 of Application No. 10/586,149 teaches all of the structural limitations of the claim that comprises the device, with the obvious modifications as set forth above.

s. Regarding claim 6, claim 27 of Application No. 10/586,149 teaches all of the structural limitations of the claim that comprises the device, with the obvious modifications as set forth above.

t. Regarding claim 7, claim 28 of Application No. 10/586,149 teaches all of the structural limitations of the claim that comprises the device, with the obvious modifications as set forth above.

u. Regarding claim 8, claim 29 of Application No. 10/586,149 teaches all of the structural limitations of the claim that comprises the device, with the obvious modifications as set forth above.

v. Regarding claim 9, claim 30 of Application No. 10/586,149 teaches all of the structural limitations of the claim that comprises the device, with the obvious modifications as set forth above.

w. Regarding claim 10, claim 31 of Application No. 10/586,149 teaches all of the structural limitations of the claim that comprises the device, with the obvious modifications as set forth above.

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x. Regarding claim 11, claim 32 of Application No. 10/586,149 teaches all of the structural limitations of the claim that comprises the device, with the obvious modifications as set forth above.

y. Regarding claim 12, claim 33 of Application No. 10/586,149 teaches all of the structural limitations of the claim that comprises the device, with the obvious modifications as set forth above.

z. Regarding claim 13, claim 34 of Application No. 10/586,149 teaches all of the structural limitations of the claim that comprises the device, with the obvious modifications as set forth above.

aa. Regarding claim 14, claim 35 of Application No. 10/586,149 teaches all of the structural limitations of the claim that comprises the device, with the obvious modifications as set forth above.

bb. Regarding claim 15, claim 36 of Application No. 10/586,149 teaches all of the structural limitations of the claim that comprises the device, with the obvious modifications as set forth above.

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cc. Regarding claim 28, claim 37 of Application No. 10/586,149 teaches all of the structural limitations of the claim that comprises the device, with the obvious modifications as set forth above.

dd. Regarding claim 34, claim 39 of Application No. 10/586,149 teaches all of the structural limitations of the claim that comprises the device, with the obvious modifications as set forth above.

ee. Regarding claim 35, claim 41 of Application No. 10/586,149 teaches all of the structural limitations of the claim that comprises the device, with the obvious modifications as set forth above.

ff. Regarding claim 36, claim 42 of Application No. 10/586,149 teaches all of the structural limitations of the claim that comprises the device, with the obvious modifications as set forth above.

### ***Conclusion***

29. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Heeger ('583), Tessler ('139), Koyama ('182), Bao ('668), Jackson ('572), Avouris ('916), Baldo ('698), Iechi ('952 and '215), Yoshizawa ('251), Hepp (Phys. Rev. Lett., Vol. 91), Ahles (Appl. Phys. Lett., Vol. 84), and Meijer (Nat. Mater., Vol. 2) all teach ambipolar organic transistors and light emitting transistors, as well as the methods of making and using them.

***Contact Information***

30. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MATTHEW W. SUCH whose telephone number is (571)272-8895. The examiner can normally be reached on Monday - Friday 9AM-5PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kiesha Rose can be reached on (571) 272-1844. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/Matthew W. Such/  
Examiner, Art Unit 2891